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ACADEMY OF MEDICINE TORONTO

By J. Gibb Wishart, M.D.

I HESITATE to appear before you this evening and from this seat to address you upon subjects upon which I feel so ignorant.

This Academy, which I watched through its pre-natal development, and at whose birth I assisted, has become in the ten years of its existence such a healthy, thriving youngster, with such a capacity for earnest achievement, and withal, with a willful temper requiring guidance and perhaps the curb, that by heart may well fail me lest I come short in making the year of my official control, one of distinct progress.

The rule by which you enlist for three years the services of the individual selected for your highest office—the first year as vice-president, the second as president, and the third as consultant in chief—is, to my mind, most wise, for thereby he is at once trained and stimulated.

It is my pleasing duty to direct your thought first to the program for the year's study. The program should be annually prepared in advance with a view to definite progress in a scientific direction. It should not be arranged haphazard nor capriciously.

Each eminence gained upon our path opens up vistas of land unexplored. It is given to our profession to pursue as fascinating an exploration of new truths as ever it was to those intrepid voyageurs who threaded their way across the ocean, entered the Hudson Straits or the mighty St. Lawrence, and blazed their paths across this continent to the Pacific. It may be, at times, a false idea, an ignis fatuus which leads us on—and we may in our zeal venture to name our mighty rapid Lachine—but still it is truth and truth only that is our one endeavor.

Our pursuit must never be aimless, and I invite the executives of each of the sections to assist in directing the forces of the succeeding year in such a way as will ensure a maximum of success and a minimum of wasted effort. The suggestions thus handed on will ensure a steady development.

Even as it is, what a wealth of experience is available for each of our fellows who makes his attendance a serious effort, who takes the program and directs his reading along the lines it suggests, and makes it a resolve to assist his fellows onward. As iron sharpeneth iron, so will a Fellow increase the usefulness of his section.

We hope to issue an advance notice of

our season's course of study, and invite your careful perusal thereof, and a regular preparation for each evening's task.

During the summer your officers have had a few matters of importance to transact. The commissioner invited us to a couple of final interviews upon the position taken up by the followers of the various cults seeking to assist us in the pursuit of medical truth, and we have reason to expect that his report has been finished and that its proposals will presently be laid before the Government and the public. There will be need of a close scrutiny of this report by every Fellow, in a united endeavor upon our part to secure our one aim, that every student of medicine in the widest application of the term be required to take the one full course of study and pass the required tests, after which he may practice as he may elect.

It is interesting to note in this connection that the labor and research of our past president, Dr. Ferguson, in the preparation of the articles upon "False Systems of Healing," has been recognized officially by the American Medical Association's Council on Medical Education.

As you are aware, the Academy held a special meeting in July, and placed upon record its views upon the failure of the Government to place the care of the returned soldier in such hands as the profession could trust and respect. I regret to say that matters, up to the present, have not been improved, nor have either the daily press or the Government shown any serious appreciation of the fact that the questions involved are primarily medical, and as such amenable only to a medical tribunal.

The Academy has also taken steps to meet the attempt to victimize the public by the exploitation of various alcoholic beverages known as "Tanlac," etc., etc., and trust that presently we shall see the termination of this newest method of trading upon our aches and ills.

The House Committee has made new arrangements regarding the caretaking, and measures to prevent a recurrence of the discomfort occasioned last winter through inadequate heating.

Shortly after the inception of our Academy, steps were taken to ensure for our citizens a supply of healthy milk, and a Milk Commission was appointed by this body. The result upon the milk was very beneficial, but the process has been costly to the public pocket. Is it not time that we as an Academy urged a further step forward, the municipalization of the entire milk trade of the city, including the control and ownership of the dairy farms, the purification and preservation of the milk, and its distribution to the citizens? This would greatly cheapen an essential article of food, by the cutting out of competitive advertising, and the present prodigal waste of time and labor in distribution.

As an Academy, our duty with regard to venereal diseases is not yet discharged.

The striking increase in the prevalence of venereal diseases in Canada is a question that must interest the whole medical profession. There are those who insist that the increase does not exist, but stubborn facts make apparent the falseness of their claim. The reluctance of legislative bodies to deal with this question is to be greatly regretted and there can be no reason why this Province should not include these diseases in the Contagious Act. A very slight alteration of this Act would enable the police and other authorities to place the dangerous elements in society under control.

The women of the street, who at present are at liberty to come and go as they please, and who carry on their wretched traffic unhindered, could thus be taken care of and treated in the early stages of disease. This would enable the authorities to weed out the defectives among these classes and as a great proportion of the women actually engaged in the illicit traffic are definitely feeble-minded, they might be segregated, if the citizens would wake up to their responsibility.

It is, in my opinion, the duty of every physician to educate the people of the community to a knowledge of the present peril and to suggest this most sane way of dealing with it.

The well-known cover of Bairnsfather's "Fragments from France," bears the cartoon of two Tommies sitting in their

dug-out contemplating the effect of a well-placed enemy shell, and remarking, "There goes our blinkin' parapet again," an endeavor by the artist to give utterance to the feeling of being—as the "Student in Arms" has it—"blasphemously fed up." We, as an Academy, are "blasphemously fed up" with the misdirection of the medical side of Canada and the great war by our Government and our Militia Department. The profession in Canada has always occupied a high position, in the standing of its institutions of medicine, in the training and quality of its rank and file, and in the skill and wisdom of its leading practitioners—but we fail to note that a single endeavor has been made by those who govern, to make use of these in any fair and proper way, although our profession has been equal, at least, to that of any other of the Allies, in the way it has come forward to assist,—and to die when needful.

Compare the action of the United States. No sooner was war declared than the acknowledged leaders of medicine in every single department, were called to Washington to consult on the most scientific way in which the trained profession could be utilized, and these committees were given full control as to the selection of men to fill the various positions. To take one instance—the oto-laryngologists were listed to the number of 5,488, and in July every one of these men were circularized, and their replies card indexed. In Canada, it has been most haphazard. A few of our leading physicians and surgeons have been sought out, but the majority have not been called on, and in not a single instance—except this summer when the Dominion Medical Council was invited, I understand, to offer some suggestions—have any of our medical associations, university or scientific bodies, been used for their legitimate purpose. There has been no "Win the War" policy in medicine.

The recent action of our College of Physicians and Surgeons in circularizing the Ontario profession is a step forward, but for this the Government cannot claim credit.

The result of this lack of initiative is self-evident. There has been a complete break-down. The C.A.M.C. is considered by a parliamentary committee to be a failure; there is a committee of laymen placed in charge of the returned soldiers; our respected Fellow and guest, general Fotheringham, has been dallied with so long at Ottawa, that his resignation has been sent in; there is no permanent surgeon-general at Ottawa, in whom the profession can place confidence, and if there were, he would not have a voice at the table of the Militia Council. My thought upon this subpect is well expressed in an editorial of the Journal of the American Medical Association, of July 28:—

"The medical service has not been given the rank and authority which its importance deserves, and the work of the medical department, and the views and opinions of medical officers, have not been given sufficient weight by military men. To permit an officer with military training alone, no matter how high his rank or how brilliant his attainments as a soldier, to dictate conditions regarding the hygiene and sanitation of troops and the management of hospitals is as ridiculous as it would be to give a surgeon authority over the artillery or the aviation corps. Subject always to the necessities of warfare, the military and medical services must be on an equality. Each line of activity requires highly specialized, technical training. To permit either one to encroach on the field of the other is not only absurd, but is often suicidal. Especially should there be the closest co-ordination and co-operation between the military and medical officers in order that the Medical Corps may be of the greatest assistance. This is the lesson which Japan learned in Manchuria, and which the English have demonstrated on the Western front."

And in the utterance of Lord Esher in the London Times of February 3:—

"Certainly the control of the adjutant-general's branch over the Royal Army Medical Corps was and is responsible not only for the early failure to grip the medical factors of the war, but they hampered conditions under which the

surgeon-general worked. His triumphs and those of the Royal Army Medical Corps have been achieved in spite of obstacles that the subordination of science to ignorance, and of elasticity to military discipline explains, but cannot justify."

The passage of the Military Service Act at Ottawa, raises two questions of intense interest to our profession. 1st—What number of army surgeons can the profession of this country legitimately supply; and, 2nd—Shall students entered upon their course of medical study be liable to the draft?

In August last, the Central Medical War Committee of Great Britain informed the Government that after a careful survey of the whole of England and Wales, it is of the opinion that no more physicians can be called on to take commissions in the Army Medical Corps, without seriously endangering the supply of physicians for the treatment of the civil community.

In Australia the stress has become so great that the senior practitioners are being called upon to come forward and take on the younger men's job, and it is announced that the Department of Defence will send to France within the next two months every available physician.

In New Zealand we are informed that "as regards medical service for the civilian population the position is now becoming very acute." The Minister of Public Health there, recently pointed out the absolute necessity which has arisen for the mobilization of the medical services, and the exercise of control in the location of physicians.

I have recently been invited, semi-officially, to ascertain who among the Toronto practitioners beyond the army service age, are ready to step forward and assume the duties of house-physicians and surgeons, laboratory and dispensary assistants.

So far as figures are obtainable, 75 per cent. of the classes which have been graduated at our University since the war began have joined the C.A.M.C., or R.A.M.C. For three years past therefore, the accessions to the ranks have been inadequate to supply the loss through death.

The second question is also important. This arose first in Britain, where, as it has proved unfortunately, all students of medicine under the fourth year were drafted as combatants. In the United States the question is now to the fore. The registration recently made covered 8,983 students of medicine, or 85.9 per cent. of all students upon the rolls of the medical schools. In Canada, at the outset, the men in the senior years were advised to remain at their studies, but the juniors were not discouraged from enlisting. The draft will affect as large a proportion of the medical student body in Canada as in the United States. There, however, the question has been solved by the ruling of the President, that all hospital interns, and medical students of the second, third and fourth years, may be enrolled in the Enlisted Reserve Corps of the Medical Department, and pursue their studies while remaining in the military service of their country, but always liable to a call to service by telegraph or letter.

A resolution was adopted by the Canadian Medical Association at its last meeting in Montreal, urging upon the Government the necessity for the mobilization of the entire profession, in order that all those fitted for service overseas by age, and health, and freedom from family duty, might be sent forth, and further, that all others might be assigned to such service at home as their training, and the necessities of the country demanded.

The war is making great demands indeed upon our profession. I do not know of any other profession, where similar incomes have been thrown to the winds at the call of duty, and yet we must be prepared to do still more.

It will be wise if this Academy make representations to the Government both as to the best means of providing medical attendance for the people at home, and their sons overseas, and also as to the provision of a continuous supply of students, to fill the ranks of the profession depleted by death and enlistment.

It is also true that the relatively low

rank under which medical officers serve, handicaps their work both individually and collectively, and in Canada a low estimate has been placed upon the Army Medical Service, the result of defective legislation, which should have been remedied long since.

It is not too late yet for the Government to summon "intelligence" to its aid. Numbers of our profession have gained experience through service that would make it possible for them to give advice that would bring order out of the chaos that exists, and it is due to the high intelligence of our profession that the Government get the best advice which the leaders of medicine can supply. But we want no party politics. Let efficiency alone be considered, whether in appointments in Canada, Great Britain, or the field.

In looking over the work of our Academy in its many phases, I am confronted by the surprising fact that we have as yet made no attempt to establish a historical museum. There are many interesting details connected with medical institutions which have passed out of existence, with leaders of the profession who are dead and gone, historical facts, relics of those we respected, medical diplomas, documents, etc., etc., which it should be the business as well as the profit of our Academy to collect and collate.

With the cordial permission of your council, I have appointed a committee of interested Fellows, and have great pleasure in handing the treasurer a cheque to form the nucleus of a special fund to start this branch of our legitimate work. I invite your co-operation. Give your ideas and information to the members of the committee, and keep an eye open to every opportunity which offers to obtain material for our historical museum.

Where questions of public welfare relating to medicine are concerned, the great obstacle to the proper presentation of the weight of medical opinion before Parliament and the public, has been the lack of organization of the profession. Little attempt, if any, has been made to achieve this end by the College of Physicians and Surgeons, who stand, naturally, as the representatives of the profession in this province, nor has this slight attempt been followed by any measure of success.

The Ontario Medical Association, as the Provincial Branch of the Dominion Association, has been laboring for some years to evolve a scheme, and basing its efforts, to an extent, upon the plan followed so successfully by our confreres in the United States, hopes this fall to put the matter through its final stages, and secure a ready and certain method of bringing medical opinion to bear the full weight to which its training and intelligence entitle it.

It is unnecessary to point out to this body the need which has brought this action about. There are so many questions in which it is highly necessary that the profession speak out with a concerted voice so that the public may be informed, or warned, it may be; or, on the other hand, that a professional body exist, which the representatives of the public may consult before legislation is finally enacted. The success of this Academy is largely due to the influence it has exerted upon such questions as the Workmen's Compensation Act—the presentation of evidence before the Medical Commission, etc., and those who attended our annual meeting last May, and listened to the reports of our various committees, must have been amazed at the scope of our energies. If the Academy of the capital of the province could accomplish so much, what cannot be effected by a properly organized body representing the entire medical opinion of the province, and later of the Dominion, if we can induce the profession of the other provinces to follow our example? Had a Dominion body existed, such as I have indicated, we should not have seen a body of laymen appointed to tell the profession what to do medically for the returned soldiers.

To my way of thinking, whether it be in matters military, hospital, or of public health, the effect of legislation has been to bring it about that our profession has been degraded to be the hewers of wood and drawers of water for those who advertise themselves as being business men, and this reproach "that we of the profession are not business men," is often hurled at our heads. By the reorganiza-

tion which is planned, every reputable physician in the province will have an opportunity of expressing his views upon all matters of public import medically, and in such a way that no legislative body can afford to pass them over lightly.

While the public has a duty to the profession, the profession, on its own side, has a duty to the public, and the occurence of such unfortunate incidents as took place in connection with a well-known criminal case of the past summer in this city is a disgrace to us.

Ignorance of responsibility by the attending physician and the hospital authorities, is a reflection upon the training of the student, and the knowledge that every licensed practitioner should possess of the code of ethics which we profess.

Are you each personally aware that you are obligated to obey a code of ethics? I wonder. Nevertheless the law does not excuse a man because of ignorance, and our By-law No. 10 is decisive. We are bound by the code of ethics of the Dominion Medical Association. How many of you have even read these, let alone committed them to memory, and yet you are bound to these by oath. I am afraid students enter upon the study of medicine too often as a means of livelihood, or business, and do not know that they thereby assume great responsibilities. As was stated in a Globe leader of a few weeks since:—

"Medicine is not a private profession. The medical man to-day is not merely a private practitioner, he has a social obligation; he is a trustee for society; his duty to his patient and to his patient's friends must be read in the unwinking light of his own social responsibility as a guardian of public life and a leader of public opinion.

"The public good is the moral standard by which professional service is tested.

"Privileges recognized by the public and protected by parliament give duty supreme claim, and make that obligation binding upon every member of the profession."

I am not desirous of depreciating the high standard of conduct which characterizes our Fellows. My wish is to point out that we must force all the members of our profession to recognize that they must think and act as we do, or leave our ranks. We are far too lenient with those who commercialize our calling. We are disposed to protect the failings of our brethren, even when we recognize that those failings are due to a low moral standard, and not to the inadvertences which the experience that comes with years will remedy. Medical science is advancing rapidly. No one among the public can point the finger of scorn at what our profession is doing for the world. Are we at all keeping pace with this advancement, in the recognition of our moral and ethical responsibilities? Is the practitioner of to-day standing in each community upon a higher plane than did his predecessors? Is he the leader in all measures for the public good?

We boast of our advance in knowledge, but "knowledge is power, and power is not for personal advantage, or for private gain, but for social service, and for the public good."

Let us beware where we stand, lest we fall.

The very humblest man or woman who receives the license to practice medicine should know that by that act, the honor of the highest of the professions is committed to their charge; that whether they walk abroad or sit at home—they embody in their persons the dignity and moral responsibility attached thereto, and that they stand pledged as the Hippocratic oath has it, "That with purity and with holiness they will pass their lives and practice their art."

What can we do, beyond individually setting the highest example we know how; frowning down all suggestions in thought or expression which savor of a lower standard; seeing to it that our new Fellows as they are elected, receive instruction in the rules which govern our conduct, and requiring of these bodies which educate students of medicine, a definite course of teaching from such living exponents of our standards as one whom I see before me to-night.

Personally, I have always regretted that such matters form so unimportant a part of the medical curriculum at the universities, nor can I find that a graduation

oath is demanded by the College of Physicians and Surgeons, or by any of the universities of this province with the exception of Queen's, while that administered to the graduates of McGill is in Latin.

It may be asserted that an oath has little weight, but no Masonic initiate could forget the oath he takes—and its administration would, at least, serve to draw the attention of the attestant to the solemn character of the service upon which he enters, and there is no reason why every practitioner should not legally be compelled to keep a copy of the oath in a prominent place in his office as a perpetual reminder of his duty. The oath should be administered at a graduation in no merely formal way, but with a solemnity befitting its nature.

The sin of the educated practitioner is, as a rule, one of ignorance, and as things are now conducted, there is little wonder that this ignorance exists.

An evil which has been very prevalent among the profession to the south, and which was a factor in the inception of the American College of Surgeons, has shown its hydra head in Ontario and in Toronto. I refer to fee-splitting.

To mention it is to condemn it. It is a frankly dishonest transaction which stamps as a fraud the practitioner, who demands his pound of flesh. It destroys all possibility of the patient obtaining an honest opinion from his statement if that attendant is to share in the fee of the operator to whom the patient is referred by his attendant. Timothy was assured by St. Paul that the love of money was the root of all kinds of evil. This is one of the evils which not only injures the parties to the transaction, but commercializes the profession and gives sure and certain ground for distrust on the part of the public.

It is to the interest of this Academy to "wage a relentless war of extermination upon this degrading and dishonest practice, so fatal to professional honor and integrity."

I am credibly informed that men in this city have endeavored to solicit the operative work of practitioners upon the frankly stated basis of a fifty-fifty division of the fee, and I have personally been solicited by a general practitioner to state what percentage he might expect to receive upon referred cases. The physician who sells his soul of honor for a paltry fee, and the would-be surgeon who builds up his experience upon cases referred upon a financial basis of share and share, are equally abhorent, and with your help we will drive them from our midst.

This naturally introduces the subject of the training of the surgeon. Surgery has been well-defined as "a science founded upon certain fundamental principles, without a thorough knowledge and understanding of which, no man can do himself or his patient justice." As Dr. Finney has said:

"No doctor, no matter who, without a thorough surgical training, has the moral right to attempt to make a practice of surgery. He may succeed in doing certain minor operations or even certain major operations, well; he may learn to do mechanically certain things satisfactorily to his patient and to himself, and he may have a fair percentage of success; but, sooner or later he will meet his limitations, and in attempting to go beyond these, with his small and imperfect equipment, some of the catastrophies of surgery will happen, and then, who pays the price of his temerity and ignorance? Yes, let me repeat, surgery is far too serious a matter to be lightly undertaken by those who are not thoroughly trained in the fundamental principles underlying its proper performance."

It is not necessary to leave this city to see in well-equipped operating rooms—heinous crimes committed against the most fundamental surgical principles and technique. These are done by men who for the gain of filthy lucre would shorten the regular and necessary steps to a reputable surgical practice. They will not agree to spend several years as an assistant and understudy to a surgeon of experience—but by various underground expedients, solicit cases upon which they may try their prentice hand.

No hospital which values its reputation, or which appeals to the public for financial support upon humanitarian

grounds, has the slightest right to open its operating rooms to any but tried and experienced surgeons of established and good repute, unless it be in the capacity of assistant only.

We read everywhere, articles suggesting that the one great effect of the war will be a new world—a fresh outlook, an upsetting of accepted aspects of truth—a fundamental change. In fact, it will usher in a reign of "peace and good-will to men." What, we are asking, will be its effect upon medicine?

Those of you who have read the second volume of "A Student in Arms," will have been struck by the chapter entitled "The Good Side of Militarism," where Donald Hankey refers to the fact that in pre-war days "self realization" was considered to be a primary duty of every man and woman, and the words "Fear God and keep His Commandments," amended to read "Self realization"—but that as a result of military discipline as practiced in the 20th Century by the democracies of the world, we have learned the "unimportance of individuality, realizing that in a national, a world crisis, it counts for nothing"—the good soldier has learned the hardest lesson of all—the lesson of self-subordination, to a higher and bigger personality. He has learned to sacrifice everything belonging to him personally, to a cause that is far greater than any personal ambition of his own can be.

In medicine we have seen great things —the death rate of the army from disease reduced far below that of the civil community in the times of peace; camp sanitation; the purification of water; minute attention to the bodily care of marching soldiers; vaccination against typhoid and tetanus; have achieved amazing results, and honors are pouring in upon those of our profession who have taken the lead in demonstrating what results may be obtained when medical science is utilized to the full. We are everyone proud of our own Col. Nasmith, C.M.G.

Is it not evident that the effect of all this is to exalt the preventive side of medicine; to reveal to the world that syphilis, the care of the child of school age, tuberculosis, etc., etc., may be taken out of the hands of the family practitioner and assigned to the care of the state. May these not be the signs of the times that the day of the competitive physician and surgeon is over and that presently he must become a member of a panel and have removed from him the opportunity to exploit his experience for mere gain—that as his training is even now largely paid for by the state, so his employer hereafter may be that same body. The greatest good of the greatest number.

What will follow will be—and already there are ominous movements in the not too solid ground on which we stand—that those who teach in our clinical and final subjects will be whole-time men, paid by the state at a salary commensurate with their responsibility and with an equal allotment of money for the maintenance of the laboratory side of each department.

I am not a prophet, but let us not mistake, there are great changes coming.

Fellows of the Academy of Medicine, let us then be up and doing, and remembering the words of our example, the Great Physician, "Work while it is day."

Social Aspects of the Venereal Disease Problem

By Captain Gordon Bates, C.A.M.C.; Captain D. T. Fraser, M.C., C.A.M.C.; Captain Maurice McPhedran, C.A.M.C., Venereal Disease Section, Base Hospital, M. D. No. 2, Toronto.

THE great difficulty one has met with in the past in discussing the question of the social aspects of venereal diseases has been the lack of available data. Medical, especially hospital statistics—proving the frequent and serious physical results of gonorrhoea and syphilis can be obtained very readily. But the fact that venereal diseases are not reportable as are other communicable diseases has resulted in a lack of accurate knowledge of their extent in a given community and hence of how serious a drain they are on the physical and mental welfare of the people at large.

If one is ever to do anything towards eliminating venereal diseases it is necessary to come to a definite idea of the causal factors involved. This involves a comprehension of the magnitude of the task before one and of its character. Public opinion is prone to act only on the presentation of a clear cut case. Therefore, accurate concrete details of the situation are absolutely essential.

The necessity for efficiency in the army, in the past has had a great deal to do with the eradication of communicable diseases whose existence was a menace to the welfare of the troops. A notable example is, of course, typhoid fever. Venereal diseases undoubtedly are being dealt with in the army with an efficiency which stands in marked contrast to methods adopted by the civilian authorities. Periodic inspection for the presence of venereal disease results in its early detection. Quarantining of all infective cases in the army (the infected civilian is allowed to run free on the street) clearly presents desirable medical results in limiting the spread of the disease and has made it possible to secure information which has been unavailable in civil practice.

Realizing that this gave us an unusual opportunity we recently instituted at the Base Hospital, M. D. No. 2, Toronto, a social case sheet by which the infection of each man is investigated with a view to ascertaining the circumstances surrounding it. The information acquired has been used partly as a means of tracing up sources of infection, namely, the infected women—more largely as a method of studying the causal factors in a social symptom of the gravest significance.

Briefly our investigation extending over a period of four months has had the following results.

Altogether four hundred and seventeen infected men were questioned. Of these the age was as follows:

70 men were under twenty years of age.
144 men were between 21 and 25.
72 were between 26 and 30.
31 were over thirty years of age.
36 men were married.
263 were single.

The town and country of infection was ascertained in as many cases as possible. Results were as follows from 374 cases:

England	13	Quebec	1
Scotland	1	Winnipeg	6
France	1	St. John, N.B.	1
Toronto	199	New York State	1
Hamilton	17	Buffalo	14
Brantford	3	New York	11
Owen Sound	2	Chicago	10
Grimsby	3	Milwaukee	1
St. Catharines	4	United States	1
Angus	2	American Sault	2
Sault St. Marie	2	Detroit	7
Barrie	3	S. Newark, Conn.	1
London	3	Newark	2
Lindsay	1	Cleveland	2
Lisle	1	Memphis, Tenn.	2
Belleville	1	Emporium, Tenn.	1
St. Thomas	1	Waterbury, Conn.	1
Midland	1	Pittsburg	2
Kitchener	1	Philadelphia	1
Orillia	1	Indiana	1
Whitby	1	Penn. Grove, N. J.	1
Dunnville	1	S. Carolina	1
Coldwater	1	Houston, Texas	1
Rama	1	San Antonia	5
Windsor	1	Trenton, N. J.	1
Southville	1	Boston	3
York Mills	1	Chester, Pa.	2
Dundas	1	California	1
Burlington	2	Texas	1
Kincardine	1	Ft. Lawton, Texas	1
Montreal	14	Cuba	1
Vancouver	3	Rio de Janiero	1
Halifax	4	Jamaica	1
Hull, P.Q.	2	Cape Town, S. A.	1
Sherbrooke	2	Alexandria, E.	1

Ontario	256
Other parts of Canada	33
British Isles	15
United States	77
Other countries	5
	386

In many early case sheets this information was not obtained.

Each man was asked whether he would be willing to identify the woman who had infected him. Usually the answer was "Yes," although in the majority of cases he claimed to be unable to find her. Out of 417 men only twenty-two definitely refused.

The question of payment was taken up. It was found that 151 men had made payments of money. The amount varied from 75c to $15.00. The usual amount was $2.00.

55 men provided a meal as payment.

6 made presents of clothing or other articles.

Others provided entertainment at a movie or theatre. A number paid for a room for the night, or for an automobile drive.

127 paid nothing whatever.

Although it was found that in many cases the infected man knew little or nothing about the woman from whom he received his infection, we were able to acquire definite information about many.

Woman's Age

32 women were estimated to be under 18.
29 women were estimated to be 18.
268 women were estimated to be from 18 to 25.
45 women were estimated to be over 25.
In 43 cases no information was obtained.

Women Married, or Single State

213 women were single.
27 women were married.
10 women were widowed.
2 women were divorced.

Social Condition and Occupation of Women

44 women were classified definitely as prostitutes, often living in houses of prostitution. This latter condition of affairs, however, was confined to certain cities. From Montreal, this was usually the case. In only three cases was it true of Toronto, and in one, of Hamilton.

12 women were munition workers.
41 were domestics or waitresses.
9 were factory workers.
13 were stenographers or clerks.

Other gainful occupations were:

Boarding house keeper, actress, saleslady, theatre usher, chorus girl, cabaret singer, mica splitter, milliner, manicurist, bookkeeper.

One hundred women were found to have gainful occupations aside from prostitution. In most other cases information could not be obtained.

The Relation of Alcohol

The relation of alcohol to infection was investigated. It was found that out of 392 cases in which information was obtained in 97 cases, or 25.5 per cent., either the man or woman, or both, had indulged in alcohol. In 295 cases the influence of alcohol was denied.

Place of Infection

In 119 cases infection took place out of doors.

In 126 cases infection took place indoors.

In 18 cases infection took place in a house of prostitution.

In 60 cases it took place in the girl's boarding-house.

In 21 cases the man and woman went to a hotel and registered as man and wife.

In 38 cases they went to strange boarding-houses.

In 12 cases infection took place in the man's house.

Other infections were in automobiles, trains and steamboats.

21 infections took place in High Park, Toronto.

11 took place in Queen's Park.

A large number of others uncounted took place in Riverdale Park, Centre Island, and Hanlan's Point.

So much for the social facts elicited by the present investigation. Since this is primarily a paper on the social aspects of venereal diseases we will not dwell at length on the medical side. Yet the following medical facts in view of the prevalence of venereal disease have a serious social significance.

Gonorrhoea is responsible for from 6,000 to 10,000 cases of blindness in the United States.

Gonorrhoea is the cause of more than 10 per cent. of all blindness.

Gonorrhoea is the cause of many surgical operations on the female generative organs, perhaps 50 per cent.

Gonorrhoea is the cause of many chronic diseases of the joints, bladder and generative organs.

Gonorrhoea greatly decreases one's earning capacity.

Syphilis affects about 8 per cent. of the total population.

Syphilis is transmissible to the offspring and causes death in 80 per cent. of those infected.

Syphilis is the cause of 10 to 35 per cent. of all insanity.

Syphilis is one of the causes of mentally defective children.

Syphilis is the cause of locomotor ataxia.

Syphilis is the cause of paresis or softening of the brain.

Syphilis is the chief cause of apoplectic and paralytic strokes in early life.

Syphilis is the cause of nearly half the abortions and miscarriages.

Syphilis is the cause of a large proportion of diseases of the heart, blood vessels, and other vital organs.

Syphilis decreases the length of life about one-third.

Syphilis greatly decreases one's earning capacity.

We can only estimate the amount of venereal disease in Ontario. Our statistics from the Base Hospital Venereal Clinic are perhaps sufficient proof of its widespread character. The fact that we have had approximately 1,500 venereal admissions among an average of less than 15,000 troops in the district—an incidence of 10 per cent. in a single year is particularly serious because we have every reason to believe that similar, even worse conditions exist in the civilian population from which men in the army receive their infection. In the army a routine Wassermann reaction is not done and a large amount of syphilis is thus missed. An example of how much syphilis might be revealed by such means is provided by the investigation by Dr. Detweiller at Toronto General Hospital (already mentioned in a previous paper). During the first three months of 1917, 12 per cent. of all public ward patients whatever the cause of their admission gave a positive Wassermann reaction, or in other words, were found to be definitely syphilitic. By such means 238 syphilitic cases were discovered in three months. This is at the rate of 952 cases yearly, and two-thirds of these cases were previously undiagnosed. Gonorrhoea is perhaps six times as prevalent as syphilis. With the above facts in view it is clear that although only in the army and in large well-organized civilian hospitals, is it thought worth while to count venereal cases the actual number at large in the civilian population must be enormous.

The end results from a medical standpoint are found in the constantly unnecessarily high population of our hospitals, insane asylums and institutions for the blind. An example of this is the fact that in Toronto Hospital for the Insane 25 per cent. of the total male admissions in a single year are due to general paresis. The number of deaths resulting from venereal disease does not seem to be nearly so large as it actually is because deaths from general paresis, aneurysm, early apoplexy, etc., have not been classified as directly due to syphilis.

The end results of venereal disease from a community or social standpoint are, of course, innumerable and disastrous. The problem thrown upon every community by the untimely death of breadwinners and heads of families ultimately is serious both for the community and the unprotected widows and children left behind. The inefficiency of workers resulting from chronic disease always active and often unsuspected is very great.

While the venereal disease question is perhaps the most serious medical problem we have yet encountered, it is capable of solution if causal factors are thoroughly investigated and an attempt made to eliminate them. First of all however, we must understand our problem—and we have never begun to understand it in the past.

Some of the essentially medical steps for its eradication can be taken immediately. Facilities for diagnosis and treatment should be multiplied. The free performance of the Wassermann, as in Ontario, should be available everywhere.

Clinics should be organized not only in the large cities, but since these diseases are universal in their distribution, in many of the smaller towns where clinics are not supported and the treatment of venereal diseases absolutely neglected. Because discontinuance of treatment before cure is established and subsequent marriage of infected persons results in an enormous amount of innocent infection a determined effort should be made to educate venereally infected patients. Literature should be placed in every patient's hands explaining the serious character of his disease and the importance of a complete cure. This literature should be provided by the government and its distribution made obligatory on the part of the physician.

A determined effort should be made to find and treat the man or woman who is responsible for each infection. The Social Service nurse must be utilized for searching out persons who have acted as sources of infection and referring them to hospitals. If money has passed the aid of the police can be invoked.

The greatest work to be done, however, is not essentially medical. Venereal disease is a social disease, or if you will, a social symptom, and its eradication can only be accomplished by widespread general organization.

First of all, the information we already have should be available to the public. In other words a widespread dissemination of knowledge such as has been instituted by Toronto newspapers in the past few weeks is essential. Lectures to university students as future leaders of thought are most desirable. The play "Damaged Goods" is shown to the civilian population everywhere in the United States and England, is endorsed by the greatest public health authorities and during the last two weeks officially by the secretaries of both the United States army and navy as well as the surgeons-general of the army, navy and public health service. Undoubtedly it should be shown in Ontario and probably will when all the facts are placed before the Government. The establishment of exhibits by health departments along the lines of the Coney Island exhibit supported by the American Social Hygiene Association and New York Board of Health should be very useful in giving men and women throughout the country an idea of the physical and social results of venereal diseases.

The use of the social case sheet as a means of investigating one's community has proved to be a most valuable method of getting definite facts together. So far the use of this sheet has been confined to men in the army. It should be utilized to question civilian patients and a new set of questions should be devised as a means of questioning women as to the reasons for their infection and for their lapse to an immoral life if such exists.

The use of the social case sheet has revealed the fact that many hundreds of young women walk the streets of Toronto nightly, ready to sell their virtue and their future, or fling it away for a good time. It has proved also that similar conditions exist throughout Canada. Such serious facts must give us pause. Is it not essential that the reason for conditions which must seriously affect the present and future citizenship of Canada should be thoroughly investigated?

As a preliminary to further investigation certain data were kindly submitted by Dr.C. K. Clarke, Medical Supt. of Toronto General Hospital. This investigation it was thought might reveal definite information regarding the social, economic and environment condition of women under treatment at the Venereal Clinic of Toronto General Hospital. The results of this limited enquiry are tabulated.

Summary of Thirty-two Cases Under Treatment at Toronto General Hospital

No. cases 16 years and under having syphilis	2
No. cases 16 years and under having gonorrhoea	2
No. cases 16 years and under having syphilis and gonorrhoea	2
No. cases 16 years and under having pregnancy and gonorrhoea	2
No. cases over 16 years with syphilis	8
No. cases over 16 years with gonorrhoea	6
No. cases over 16 years with syphilis and gonorrhoea	2
No. cases over 16 years with pregnancy and gonorrhoea	1
No. cases over 16 years with syphilis and pregnancy	2
No. cases over 16 years with pregnancy	2
No. cases over 16 years with gonorrhoea, syphilis and pregnancy	3
Total number with syphilis	10
Total number with gonorrhoea	8
Total number with syphilis and gonorrhoea	4
Total number with pregnancy and gonorrhoea	3
Total number with pregnancy	2
Total number with gonorrhoea, syphilis and pregnancy	3

Nationalities

Canadian	16	Scotch	1
English	10	U. S. A.	1
Irish	2		
C. Jewish	1	Married	5
Colored	1	Single	27

Occupation

Domestic	9	Bookbinder	1
School	2	Cook	1
Artist's model	1	Factory	2
Waitress	1	Prostitute	3
Munition worker	3	Clerk	2
Labeller in factory	1	Dressmaker	1
Telephone operator	4	Leather worker	1

Places Where First Immoral Acts Took Place

Parks, lanes, fields, etc.	13	Hotels	2
		Houses of prostitution	2
Rooming houses	5	Own home	6
Boarding houses	4		

Causes for Immorality

Feeblemindness	17	No cause given	4
Insanity	3	Lack of parental care	5
Poor home environment	1	Ignorance	2

Number in Public Institutions Beside Hospitals

Alexandra School	3	Children's Aid Society	3
Home of Good Shepherd	1	The Mercer Reformatory	2
Haven	5	The Rescue Home	1

Began immoral life out of city 15

Mental Status

Feebleminded	20	Backward	1
Insane	3	Normal	5
Unstable type (prob. F. M.)	1	Unknown	2

Children innocently infected with G. C. 8

Abnormal mentally 78.12 per cent.

Fifteen of these cases were taken from various public institutions. It is a notorious fact that the inmates of such institutions are commonly feeble-minded. The relationship between the question of the feeble-minded and the venereal disease question are shown here in rather a startling manner.

The social case sheet should be used for the investigation of the case of every woman who appears in the police court charged with prostitution and every woman in an industrial home. Her home environment, her education, her mentality, her nutrition, her recreation may all be factors in her life. At any rate the time for sneering at the woman of the street has passed. She, with the disease with which she is infected, is a menace to every innocent home in the country and at the same time a product of the civilization which we are helping to organize. The facts in regard to her must be known. If loneliness, lack of recreation, lack of education and late marriage in men and women are factors, we have it in our power to remedy matters. The public are not callous or indifferent. It is only necessary that they see the facts as they are. Both with the professional and clandestine prostitute the feeble-minded question is an important one, and means to segregate this class of the community are essential. The alcohol problem, always a factor, happily, seems to be on the way to solution. Venereal disease must be made quarantinable and reportable as soon as public opinion is ready for such action. It should be made quarantinable immediately, that is, it should be possible to detain infected persons who neglect their treatment. A law along the lines of the Western Australia Venereal Diseases Act should be practicable in Canada and would cover most of the immediate necessary steps.

The attitude of the man on the street towards the venereal disease question is undergoing a healthy change. He is realizing that it cannot be hidden or smothered because it is nasty, but that it must be brought to the light because it is terrible. The tragedy of the woman of the street is fraught not only with pathos but with danger, potential or actual, to every home in the country. It is a menace alike to the individual and to the state. It is a challenge to every citizen who cares for the welfare of his community. It is a great public question which only whole-hearted work and widespread co-operation can solve.

The Technique of the Bordet-Wassermann Reaction for Use in Public Health Laboratories

*A consideration of the problems involved in its standardization**

By H. K. DETWEILER, M.D.

IT is safe to say that of all the laboratory tests now available to the general medical profession, whether chemical, bacteriological or serological, none has proved itself of such great value at the present time, or offers such great possibilities for the future, as the Bordet-Wassermann reaction. It is quite true that only in the larger centres of population has it had, up to the present, a wide application, and as a consequence, the statement just made will sound somewhat extravagant to those practitioners from outside points who have not been closely in touch with such work. It is not yet realized by many physicians that syphilis may be the underlying cause of many conditions which are so obscure as regards diagnosis, and so obstinate in yielding to symptomatic treatment.

A wider application of the test would not only reveal the secret in many of these puzzling cases, but would prove of great eliminative value where the result is negative. Add to this the other, larger sphere of this laboratory procedure, that of ascertaining in a scientific and reliable way, the progress of a syphilitic patient under treatment. Too few physicians avail themselves of this valuable guide in treatment and prognosis.

Unlike the Widal test, or other diagnostic methods of the laboratory, the Bordet-Wassermann reaction is complicated, in the preparation of the reagents, the carrying out of the technique and the interpretation of the results. It is not to be wondered at, therefore, that many deviations from the original method have been described by various workers, who claim special advantages for their respective modifications. These alleged advantages may be divided conveniently into two classes;

I. Those claiming a more delicate or accurate diagnosis.

II. Those claiming a simplified technique designed to reduce the labor involved in making the test.

It is not within the compass of this paper to describe these various methods in detail, but mention will be made from time to time of some of the important modifications while discussing the different subjects in their proper order.

It may be well to analyze our objects in performing the Wassermann test. First of all we desire to detect every case of syphilis. Secondly, we consider it equally essential to detect the absence of syphilis in all cases not infected. Extremists are always to be found in the medical profession and among the champions of the Bordet-Wassermann reaction there are a few enthusiasts who claim for it almost supernatural powers. On the other hand there are some (1) (and their numbers are significantly few) who claim very little specificity for the test. In a calm consideration of the whole matter one must realize that there is no diagnostic method, clinical or laboratory, known to medical science, which is infallible. The percentage of error is not only due to technique and its limitations, but there is no doubt that the personal element enters largely into the question, and as Ottenberg (2) says, some good workers obtain satisfactory results in using inferior methods, simply because of skill and experience in using the method.

It is, however, both startling and gratifying to find such an unexpected uniformity of results as now exists in the different

*From the Department of Medical Research, University of Toronto, and the Laboratories of the Provincial Board of Health, Toronto.

(1) Coca; Jour. Immunology, 1916, I. 484.

(2) Ottenberg, Reuben; Archives of Internal Medicine, March 1917, Vol. XIX. 457.

laboratories, and this knowledge should act as a spur to encourage the workers to standardize their technique and thus place the test upon the highest scientific plane.

Let us now consider what is involved in the effort to detect every case of syphilis. Viewing the problem from a biological standpoint it is not difficult to understand that during the first two, or even three weeks, after the appearance of the initial sore, the test is very often negative in true cases of syphilis. The so-called syphilitic antibody requires time for its production, and it would be unreasonable to expect a positive test before its appearance in the blood. Passing on, then, to the time when one should reasonably expect the presence of the antibody in the blood, several factors have an important bearing upon the result of the test. Approximately one hundred per cent. of all cases of frank secondary syphilis give a positive reaction by any of the well recognized methods. It is in the tertiary and latent stages as well as in cases involving the nervous system that diversity of results appear according to the technique employed. To these must be added cases of known syphilis which are undergoing, or have undergone treatment. One of the most potent causes of this diversity is the difference in antigen used. It is almost universally agreed that a cholesterinized heart antigen is much more sensitive than a simple heart antigen. The question we have to decide is, which, if either, is the accurate one? Then, too, comes the strength of the hemolytic system used. It must be decided as to what maximum strength is permissible without danger of losing the delicacy required to detect weakly positive cases. This factor is just as important as our determination of the minimum strength compatible with safety as regards specificity of fixation. These points, together with details concerning the actual technique employed, are matters which must be left to the judgment of the investigator and are therefore more or less arbitrary. With these significant facts before us, it is not difficult to appreciate the obstacles confronting an attempt to standardize the whole procedure. It is the purpose of this paper to take up each point in detail, to present the actual findings, and to draw, therefrom, conclusions which, it is hoped, will be of value to the workers in public health laboratories.

For the sake of uniformity we shall assume from the beginning that the total volume in each tube at the end of the reaction is 2.5 c.c. It is true that in the original tests Wassermann used 5 c.c. and it is also true that some laboratories now use very small amounts in an effort to economize in the reagents.

Most laboratories now use 2.5 c.c. as the optimum volume, believing that it combines reasonable accuracy with proper economy in reagents. This view coincides with our own personal experience.

THE ANTIGEN

As I have intimated above, the question of the antigen is a difficult one to solve. The choice of antigen lies, in the opinion of the great majority of workers, between the simple alcoholic extract of heart, and the cholesterin reinforced alcoholic extract of heart. It must be noted, however, that some laboratories, for one reason or another, use the acetone-insoluble fraction of the simple alcoholic extract of heart muscle according to the method of Noguchi. I have had no personal experience with Noguchi's antigen and shall refrain from comment which would only be based on second-hand information.

The simple alcoholic extract of guinea pig and beef heart has many advocates (3) and with good reason. Ottenberg compares the results obtained with such an antigen, with those using a cholesterin reinforced alcoholic extract. In 95 per cent. of the cases the results were identical. Of the 67 disagreements in 1,241 cases, 42 gave definite positive reactions with cholesterin, and negative or doubtful reactions with the simple antigen. Of these, he says, 22 were cases in which there was no reason to suspect syphilis. Taking the other twenty-five disagree-

(3) Koopman, J., Bulletin of the Department of Health, New York City, April, 1917. Ottenberg, Reuben, Archives Internal Medicine, March, 1917. Vol. XIX, 457. Stern, Margaret, Ztschr. f. Immunitatforsch. u. exper. Therap. 1914, 22, 130. Thomsen, Olaf, Ztschr. f. Immunitatforsch u. exper. Therap. 1910, 7, 389.

ments, the cholesterinized antigen gave negative results, while the simple alcoholic extract yielded positive tests. Twenty of these were known or highly probable cases of syphilis, while five were doubtful cases in which syphilis could not be excluded. He admits, however, that the cholesterin antigen gives a "far greater number" of weak positive reactions in treated syphilis, though he claims that this advantage is counterbalanced by a considerable number of false positive reactions. He therefore draws the conclusion that "cholesterin reinforced antigen should never be relied on alone for diagnosis."

Let us now analyze the data on which he forms this opinion. First of all, there are 95 per cent. of agreements between the two antigens. Of the 5 per cent. remaining, the cholesterin antigen gave positive reactions in slightly over 3 per cent. of the total, leaving less than 2 per cent. to the credit of the simple extract. About half of the cholesterin-positive disputed cases were undoubted or possible cases of syphilis, which brings the error with that antigen, according to this observer, down to slightly over 3 per cent. as compared with an error of slightly less than 3 per cent. with the simple antigen. So far the advantage is to a very small extent in favor of the latter.

Deduct from this, however, the very important drawback in not being able to detect many cases of treated syphilis. Remember also that eighteen of the twenty-two alleged false reactions charged against the cholesterin antigen were cases of pregnancy which, as has been shown in our laboratory, can easily be ruled out by repeating the test after parturition. Furthermore, where routine tests are made in a large hospital, it is a matter of common experience that many cases of syphilis are latent—presenting no symptoms or signs, and giving no history of infection. Such instances are so common that one is quite justified in concluding that of the twenty-two in which Ottenberg could find no reason to suspect syphilis, some of them at least were undoubtedly cases of that disease.

Stokes and O'Leary (4) find that in nearly every instance of provocative Wassermann tests, the cholesterin antigen alone was successful in detecting positive cases.

One more point is worthy of consideration before leaving this question—namely, the statement already indirectly referred to, that in twenty-five cases the simple antigen yielded a positive result, while the cholesterin antigen results were negative. No explanation of this phenomenon is advanced, and indeed none suggests itself to the present writer. It seems difficult to understand why an antigen made up in exactly the same way, but with the additional safeguard against false negatives provided by cholesterin, should fail to be as sensitive. Nor has this phenomenon occurred in our laboratory, although it must be admitted that we have not yet made as many tests in parallel as has Ottenberg. The experience of Thomas and Ivy (5) corroborates our own. It may be worth suggesting, therefore, that before such a statement be given full credence, control tests with more than one cholesterin antigen, or duplicate tests with the same antigen, be made, for it is possible that the variance in the results may be due to differences in technique or even to oversight on the part of the laboratory workers.

To sum up, then, the balance seems to be definitely in favor of the cholesterin reinforced antigen, to be used, of course only by experienced workers. There is something to be said, it is true, in favor of using both as a check one upon the other. Here, too, however, it is liable to lead to confusion and doubt in the mind of the worker, who must then decide upon which result he should place his reliance. Personally, I believe that if a worker uses both antigens, the simple antigen should only be considered of value, as directing his attention to those cases giving positive results with the reinforced antigen alone, so that he may inquire more minutely into the clinical history and if desirable, as in the case of pregnancy, febrile conditions and certain tropical diseases, arrange for a further examination of the blood at a later date.

(4) Stokes and O'Leary, Am. Jour. Syph. July, 1917.

(5) Thomas and Ivy, Jour. Am. Med. Assoc. Jan. 31, 1914.

As to the dosage of antigen, the reader is directed, for an admirable summary of the facts concerning this question, to Ottenberg's paper, to which reference has already been made. It is sufficient to say that in our own laboratory the dosage is determined by two main factors, namely the anticomplementary power, and the specific binding power. No antigen is considered satisfactory which is anticomplementary in a dilution of one in eight, and which does not give a positive reaction with pooled positive sera in a dilution of one in eighty. This gives a wide range, and a point is taken midway between these two extremes, generally one in twenty, of which 0.5 c.c. is used in the test. These remarks apply to a cholesterinized human heart antigen.

THE ALEXIN OR COMPLEMENT

The next problem to discuss is that of the dosage of complement. For convenience, it is usual to dilute the guinea-pig serum one in ten with saline, and many laboratories use a fixed amount (usually 0.5 c.c.) of this dilution throughout the test. It is true, however, that guinea-pig serum varies as to its complement content, and this necessitates the adjustment of the amboceptor to meet the variation. To accomplish this, varying amounts of amboceptor are titrated with a fixed arbitrary amount of complement (0.5 c.c. of 1-10 dilution). Such a method means that instead of increasing the amount of complement when it is weaker than usual, the amboceptor is increased. This procedure is possible owing to the fact that within certain limits the results appear the same. Many laboratories, among them those of Bruck and Citron, follow this method. It seems, however, more reasonable to vary the amount of the reagent, which itself is not constant in quality. We know that the haemolysin is remarkably stable, whereas it is a matter of common experience to find certain guinea pigs whose blood shows a low complement content.

A large number of workers, including McIntosh and Fildes, Thomas and Ivy, Walker and Swift, Boas, Ottenberg, use, therefore, fixed amounts of amboceptor and vary the amount of complement according to its strength.

The advantage of the former method is one of economy of time, inasmuch as the addition of complement to the tests need not be deferred until the titration of that reagent is completed. On the other hand, as Ottenberg points out, a weak complement may be supplemented, quite properly, in the second part of the reaction by an excess of amboceptor, but this still means that during the first incubation (the fixation period) we have a deficient complement as compared with an experiment in which the quality of that reagent is up to the average. So that no matter how one varies the amboceptor, it does not have the effect of keeping the complement in the test proper at a constant level.

Granting then, that it is more logical to titrate the complement each day, the question arises as to the method of determining the unit. Wassermann took 1 c.c. of the 1 in 10 dilution, which would bring the amount to 0.5 c.c. in performing the test in half quantities as we prefer. Let us now see how this compares with the results on titrating the complement. Using an amboceptor which has been titrated and used many times previously with different complements from day to day, the average result of several representative titrations with different satisfactory complements, is taken as the unit. This usually is 0.1 to 0.15 c.c. of a 1-300 dilution of amboceptor (the amount, of course, varies with the titre of the serum of the rabbit from which the haemolysin has been obtained). Let us suppose it is 0.1 c.c. That is called the unit of this particular amboceptor, and is stationary so long as the amboceptor lasts, provided it does not become infected. Having determined the unit, a series of tubes is set up, each containing two and one-half units of amboceptor with varying amounts of complement. If the same complement is used in this test as in the previous one, it will be found that the complement titre will be approximately two and a half times less than the amount used in determining the amboceptor titre. This observation coincides with that of Ottenberg in the earlier

part of his paper, (6) but contradicts a later statement of the same author. The explanation of this apparent inconsistency seems to be that his arbitrary amount of complement is too low to produce the effect to which he calls attention. In other words it is too near the minimal dose. I have repeated the experiments he outlines many times and at no time have I obtained the results he indicates. The following is the nearest I could get to his findings:

I. Complement 1 in 10, 1 c.c.

Sheep's corpuscles 5%, 1 c.c.

Amboceptor (1-300)	0.0	0.05	0.1	0.15	0.2	0.25
Air incubation for 1 hour at 37°C..	N.H.	N.H.	P.H.	P.H.	C.H.	C.H.*

The unit was therefore between 0.2 c.c. and 0.25 c.c. and was taken as 0.22 c.c. Two units of this amboceptor were now titrated against the same complement.

II. Amboceptor 0.44 c.c.

Sheep's corpuscles, 5%, 1 c.c.

Complement 1-10	0.3	0.35	0.4	0.5
Air incubation for 1 hour at 37°C	P.H.	P.H.	A.C.H†	C.H.

Thus we see that the unit is 0.5 c.c. or nearly so.

By this it is apparent that the two titrations correspond very markedly, and any difference, while tending towards Ottenberg's contention, is very small.

Our own daily titrations are carried out in much the same fashion. The following is a typical example:

Sept. 7th, 1917.

I. Complement 1 in 10, 0.5 c.c.

Sheep's corpuscles 5%, 0.5 c.c.

Amboceptor (1-30°) ...	0.0	0.05	0.1	0.15	0.2
Air incubation for 1 hour at 37°C	N.H.	C.H.	C.H.	C.H.	C.H.

Unit=0.6 c.c.

II. Amboceptor two and one half units (0.15 c.c.)

Sheep's cells, 5%, 0.5, c.c.

Complement, 1 in 10	0.1	0.15	0.2	0.25	0.3
Reading after 1 hour at 37°C	P.H.	P.H.	C.H.	C.H.	C.H.

The unit of complement is thus seen to be 0.2 c.c.

Note how closely experiment I. and II. correspond. By multiplying the amboceptor by 2.5 the complement is divided by 2.5.

Variations from this result are infrequent and are generally very minor. They probably are caused by slight errors in technique, as for example allowing a drop or two of complement to escape from the pipette while withdrawing it from the tube.

Having determined the unit of complement in this way, it now becomes necessary to decide the number of units to be used in the test proper, for after all, this is one of the most important factors in influencing the delicacy of the reaction. Nearly all the workers who do not use a fixed dose of complement employ two units or less. Browning and McKenzie, however, advocate very large amounts, 7, 10, 15, 20, 30, 40 units, and Field 6 to 8 units. These quantities we have found, as have others, to be too large. Two units seem to be very suitable with a simple heart antigen, but with a cholesterinized extract we have found at least 2.5 units to be necessary, the unit being determined as described above. The difference between two units as determined by titrating against one unit of amboceptor, and 2.5 units as determined by titrating against 2.5 units of amboceptor, is considerable, so that the actual amounts used by us are somewhat less than those employed by Walker (7) and Swift.

The reason is found in the fact that by this method we are able to follow the treated cases much farther. It must be admitted, however, that one must have much experience in interpreting slight inhibitions with so small a margin of safety. Three units yield a perfectly

(6) Ottenberg, Reuben, Archives of Internal Medicine, March, 1917. Under the heading "Methods of keeping the haemolytic system constant," Ottenberg says that one can undoubtedly produce the same total haemolytic effect by increasing the amount of amboceptor as by increasing the amount of complement. Later, under the caption, "The dose of complement," he proceeds to show that 0.6 c.c. of complement will do the same work as 1 c.c.

*N.H.=No haemolysis.
P.H.=Partial haemolysis.
C.H.=Complete haemolysis.
†Almost complete haemolysis.

(7) Walker, I. C.; The Archives Int. Med. 1914, 11, 563.

clear result and perhaps should be advised.

The method of Thomas and Ivy theoretically has much to commend it. They use in the test the smallest amount of complement which will give complete haemolysis when titrated in the presence of the regular amount of antigen, and pooled negative serum. In other words, they estimate the anti-complementary power of the serum, and of the antigen-serum combination, and arrange for the presence in the test of one unit of complement over and above the amount fixed non-specifically by these reagents. Ottenberg uses the next dose above that which just gives complete haemolysis in order to increase the margin of safety.

We have tried this method in parallel with our regular procedure, and must confess that while the results with both were consistent, save in minor details, the readings of our own method were more definite, and while we are still using this modification along with our own for purposes of comparison, we cannot at present feel towards it the same confidence that the regular procedure inspires. It deserves, nevertheless, a longer trial under impartial control before being definitely pronounced inferior.

Before we close this discussion of the complement, mention must be made of a peculiarity of some specimens of guinea-pig serum, namely, that they are not nearly so amenable to fixation as are others. Browning and McKenzie showed this in 1909, and Ottenberg also calls attention to it. The latter author has been working at the problem with a view to devising a method whereby the fixability of the complement may be measured in the preliminary titration. Until some such scheme is evolved, the only means of avoiding trouble from this source is by using for each day's test a large number of guinea-pigs, thus minimizing the effect, should one of the sera prove weak in this regard.

AMBOCEPTOR TITRATIONS

The first question to decide is the length of time to be allowed in the thermostat for the titration. Varying from fifteen minutes (Field, Kaliski), half an hour (Sormani), one hour (Wassermann, Walker and Swift, Thomas and Ivy), two hours (Boas, Thomsen, Noguchi), the time employed by the different workers shows little uniformity. Using the air incubator at 37°C, one finds that haemolysis rarely begins before eight or ten minutes, and while it is more than half completed in thirty minutes, one hour elapses before the process actually ceases. Sometimes, indeed, on leaving the mixtures exposed for a longer period, a further laking occurs, but it is very slight and it is difficult to see any real advantage in so doing. Shorter periods than one hour are probably justified when using the water bath, since by that method the tubes and their contents reach the required temperature much more quickly. There is another advantage in the use of the water bath, namely, that constancy in temperature can be more easily secured, unless, as in our laboratory, a very large incubator is available, enabling one to open the doors without an appreciable change in temperature.

If preliminary sensitization of the corpuscles is carried out in the actual test, it is equally important to follow this technique in the preliminary titration. This may be accomplished by mixing the amboceptor and cells and allowing them to stand in the incubator for fifteen minutes before setting up the test.

SHEEP CELL SUSPENSION

Many laboratories obtain their supply of sheep cells from an abattoir, and thus are dealing with entirely different corpuscles each day. As has been shown by Ottenberg and Hopkins (8) cells of individual sheep vary considerably in their resistance to haemolysis. It would therefore seem advisable that one, or if necessary, two sheep be kept for this purpose.

Of more importance is the question of the preparation of the cell suspension. The original method was to wash the corpuscles with saline, by centrifugalization. This was done three times, and after the supernatant fluid had been pipetted off the last time, the cells were

(8) Ottenberg and Hopkins; Proc. Soc. Exper. Biol. and Med., June, 1914.

restored to the original volume of the blood by the addition of saline solution. This suspension was then diluted 1 to 20 with saline, making a 5% emulsion. Some workers, as Browning and McKenzie and Citron, still adhere to this method, but the great majority have discarded it for a modification which seems an improvement. It is merely to make a 5% suspension of the sedimented corpuscles after pipetting off the supernatant fluid. It is held, and with good reason, that the corpuscle content of the blood of different sheep, or even of the same sheep upon repeated bleedings, varies. According to the old method, this would result in varying concentration in the suspensions used. By centrifuging in the same machine at the same speed for a definite length of time, one can obtain a uniform sediment regardless of the corpuscle content of the blood.

PATIENT'S SERUM

The amount of serum used in the test seems to be fairly uniform throughout the different laboratories. Many use 0.1 c.c. in the test proper, although Wassermann gave 0.2 c.c. as the proper quantity. Personally, we follow the method of Boas of employing three tubes containing 0.2 c.c., 0.1 c.c. and 0.05 c.c. respectively. This allows of a more accurate estimation of the strength of the reaction and does not involve a prohibitive amount of labor.

Inactivation of the serum at 56°C for half an hour in a water bath is carried out in most laboratories as a routine measure. The objects of this procedure are two; to destroy the complement in the patient's serum, and to remove the unknown substances which render certain sera anti-complementary.

It was also reported (9) that active serum yielded false positive reactions. Noguchi pointed out that this was due to impurities in the antigen and claimed that active serum used in combination with his acetone-insoluble lipoids precipitated from the alcoholic extract did not give these false positive results. His method, however, has not come into general use, and for the present at any rate, it seems advisable to adhere to the practice of inactivating the serum.

NATURAL AMBOCEPTOR IN THE PATIENT'S SERUM

It is a matter of common observation that many human sera contain appreciable amounts of anti-sheep haemolysin, and some contain quite large amounts. Some workers use an extra tube in the test in which they omit the amboceptor, and if laking occurs, they may absorb the haemolysin and repeat the test.

In Noguchi's modification, by using an anti-human haemolytic system, this factor is obviated. We have carried out a considerable number of experiments in regard to natural haemolysin, and have corroborated the statements of Wassermann, Neisser, Bruck and Schuet (10) and others, concerning its occurrence. We have performed many tests, using the extra tube for the purpose of detecting its presence, and in all instances of negative results with evidence of a considerable amount of natural amboceptor, the serum was treated with sheep cells and then the test repeated. In no case in the series was there any difference in the result.

True enough, we not infrequently find evidence of natural amboceptor in the first and second, even in the third tube of the main test, but it seems never to occur in such large quantities as to cause complete haemolysis in a positive serum in the third tube (which contains only 0.05 c.c. serum). Therefore, when we find a test in which the tube containing 0.2 c.c. serum shows partial or complete haemolysis, the second tube showing less haemolysis, and the third tube (containing 0.05 c.c. serum) still less, or none at all, we immediately suspect the presence of natural amboceptor, and proceed to absorb it before repeating the test.

Just here, it may be well to call attention to some peculiar substance present in some sera, which causes haemolysis in exactly the same fashion, but which is not removed on exposure to sheep cells. Others (11) have noted the same phe-

(9) Selig and Pincus; Ztschr. f. Immunitatforsch u. exper. Therap. 1910, 5, 377.

(10) Wassermann, Neisser, Bruck and Schuet; Ztschr. f.. Hyg. u. Infectionskrankh., 1906, 55, 451.

(11) Kolmer, John A.—Personal communication. Zinsser, Hans.—Personal communication.

nomenon, but so far no explanation has been offered.

PRIMARY INCUBATION

The majority of workers follow the method of Bordet and Gengou, and of Wassermann, in the primary incubation—that is, one hour in the air incubator at 37°C. In 1913, Jacobsthal (12) reported that ice-box incubation at 8 to 10°C. for three or four hours gave better results. Since that time, his statements have been confirmed by many others, but lately the matter has come into prominence by the work of Koopman, Ottenberg, and still more recently by Smith and MacNeal (13), who find that with ice-box incubation for four hours the results with simple alcoholic extracts are just as delicate as those with cholesterinized extract in the air incubator at 37°C. The ice-box, however, is quite unsuitable for use with the cholesterinized extract and as long as we employ this antigen, we shall adhere to the air incubator method.

THE SERUM CONTROL TUBE

According to the method laid down by Wassermann, and followed by the majority of workers, the amount of serum in the control tube is double that contained in the tubes of the test proper, or, as in our laboratory, where there are three tubes, the control contains twice the amount of serum in the first tube (0.2 c.c.) Speaking from a large experience with cholesterinized antigen, I cannot agree with Ottenberg that the control tube containing a double dose of serum does not form an additional factor of safety. If, as I have argued above, the natural amboceptor is not giving us false negatives, his contention that this property of the serum robs it of its value when used in double quantity, does not hold.

The same amount of complement is added to the serum control tube as to the others. Thomas and Ivy, Browning and McKenzie, and Ottenberg, question the advisability of this, holding that there is an excess of complement, and thus slightly anti-complementary sera may be taken as weak positives because the control tube goes perfectly clear. Their contention is probably of importance where their method of using a single dose of serum in the control tube is followed. It is worthy of consideration even where a double dose is used. The means they employ (that of titrating pooled negative sera with complement) to ascertain the anti-complementary power of the serum so as to measure the minimal dose of complement for the control tube is open to criticism, for it assumes that the average will suffice, whereas approximately half the area will have a higher anti-complementary power than the one given by their test.

The ideal way would be to test each serum for anti-complementary power, and then add just sufficient complement to clear the tube. This, however, would involve a prohibitive amount of time and labor, and the advantage would not justify it.

CONCLUSION

The criticism is often made, that, in discussing such a subject, the author deals too much in generalities, that he does not tie himself down to definite statements of opinion, or conviction, and that after reading what he has to say, one cannot be sure that he has committed himself to any one method. Nor is the author to be blamed, for there are many debatable points to be considered. However, at the risk of being considered dogmatic, I shall append a complete series of examples of titrations and tests in order that there may be no doubt left in the mind of anyone regarding the method now employed in our laboratory.

This method has proved satisfactory in many thousands of cases, and, while it is not by any means infallible, in our hands, is superior to any other method we have tried so far.

I. TITRATION OF NEW AMBOCEPTOR

Dilutions of the rabbit's serum are made as follows: 1-100, 1-500, 1-1000, 1-1500, 1-1200, 1-2500 and 1-3000.

To 0.5 c.c. of each dilution are added 0.5 c.c. of a known average strength complement, and 0.5 c.c. 5% sheep's corpuscles.

Each tube is made up to 2.5 c.c. with saline, and the whole is incubated for 1 hour at 37°C. in air.

(12) Jacobsthal; Deutsch. Med. Wchnschr. 1913, 39, 1337.

(13) Smith and MacNeal, Jour. Infect. Dis. Sept. 1917. XXI, No. 3.

The titre of the haemolysin is taken as the highest dilution which yields complete haemolysis.

The rabbit's serum is then kept in sealed tubes and diluted from time to time to such an extent that the unit as determined by titration against 2.5 units of complement is somewhere about 0.1 to 0.2 c.c.

II. TITRATION OF NEW ANTIGEN

A. For non-specific binding (anti-complementary power).

Dilutions of antigen are prepared: 1-2, 1-4, 1-6, 1-8, 1-12, 1-16, 1-20.

To 0.5 c.c. of each dilution are added three units of complement and saline to 1.5 c.c.

Incubation in air at 37°C. for 1 hour.

1 c.c. sensitized sheep's corpuscles are then added and incubation for 1 hour in air at 37°C. is repeated.

The highest dilution in which there are unlaked cells remaining, is taken as the anti-complementary power of the antigen. This is usually 1-4.

B. For specific binding power.

Dilutions of antigen are prepared as follows: 1-30, 1-40, 1-60, 1-80, 1-100, 1-120, 1-140. To 0.5 c.c. of each dilution are added three units of complement, 0.1 c.c. pooled positive serum and saline to 1.5 c.c.

Air incubation at 37°C. for 1 hour.

1 c.c. sensitized sheep cells are added, and the reading taken after 1 hour in air incubator at 37°C.

The highest dilution of antigen giving complete inhibition of haemolysis is taken as the specific binding power of the antigen. It is usually 1-100 to 1-120.

III.—DAILY TITRATION OF COMPLEMENT.

This is fully described under the heading "The Alexin or Complement."

IV.—ACTUAL BORDET-WASSERMANN TEST*

Unknown Patient's Serum	Antigen	Complement	Saline	Air incubation at 37 deg. C. for 1 hour.	Sensitized Corpuscles	Air incubation at 37 deg. C. for 1 hour.	Results
0.2 c.c.	0.5 c.c.	3 units	Up to 1.5 c.c.		1 c.c.		?
0.1 c.c.	0.5 c.c.	3 units	Up to 1.5 c.c.		1 c.c.		?
0.05 c.c.	0.5 c.c.	3 units	Up to 1.5 c.c.		1 c.c.		?
0.4 c.c.		3 units	Up to 1.5 c.c.		1 c.c.		Complete hæmolysis
Known Positive Serum							
0.1 c.c.	0.5 c.c.	3 units	Up to 1.5 c.c.		1 c.c.		No hæmolysis
0.2 c.c.		3 units	Up to 1.5 c.c.		1 c.c.		Complete hæmolysis
Known Negative Serum							
0.2 c.c.	0.5 c.c.	3 units	Up to 1.5 c.c.		1 c.c.		Complete hæmolysis

The Military Aspect of the Venereal Disease Problem in Canada

By Lieut.-Colonel F. S. Patch
a/A D.M.S., No. 4, Montreal.

FROM time immemorial, the soldier has been one of the most conspicuous victims of venereal disease, and has played his own ignoble part in the dissemination of that hideous triad, which is still the most awful scourge of the human race—and of all the hideous concomitants of war, venereal diseases are the most terrible.

Were it not desirable to focus our attention upon the problem as it now affects us, it might be well worth making an historical digression, showing how venereal diseases have been spread by the soldier.

One cannot refrain from a reference to the Crusades, and their baneful influence in the dissemination of these and other epidemic diseases, and particularly to the last effect of the so-called knightly spirit —the Italian campaign of the French King Charles VIII, in the closing years of the 15th century. Whether we doubt the origin of syphilis in our own West Indian Island, and its introduction into Europe by Columbus and his bold companions of discovery, there can be no question as to the fearful consequences of the dalliance of the warriors of that youthful monarch in Southern Italy. Never perhaps has syphilis raged so fearfully as in those early years when it spread with lightning rapidity throughout every country of Europe.

The history of modern medicine is largely a record of the triumphs of the medical services of the army and navy in matters of sanitation and hygiene. The efforts to combat the plague which now commands the attention of this society, is but another instance of that initiative.

So much is this the case that many regard venereal disease as the exclusive possession of the soldier and sailor. It is not, however, to be overlooked that every case of venereal disease in a soldier or sailor originates in the civilian population and that problem is not primarily military, but civil.

In the final analysis, the problem can only be effectually dealt with by the civil authorities; yet it is of interest to discuss the efforts of the military and naval medical services to deal effectively with the problem.

Venereal disease is now the greatest source of military inefficiency; for whatever claim enteric diseases may have had to this unenviable distinction, prophylaxis by inoculation has so controlled their spread, that venereal disease has now no rival among the ailments of the army and navy, and at the present moment offers the most promising field for our efforts.

Too long a foolish feeling of prudishness or whatever you may call it, has closed our eyes to the scourge. Whatever attitude the civil authorities may take, the military authorities cannot overlook the presence of venereal disease. When statistics of hospital admission stare us in the face, showing cold, relentless facts, all our energies must be directed to reducing the toll that this disease is imposing upon us. The soldier, to be efficient, must be fit, and the man with venereal disease, being unfit for military service, is not only an incumberance, but an expense, and a terrible expense at that.

Our own Canadian experience has been costly; perhaps more so than that of our most recent ally, the United States. Their experience in the Spanish-American war, and on the Mexican border, has awakened the entire nation to the immensity of the problem, not only among their armed forces, but among the civilian population.

This general awakening is of great importance, for it is the one great virtue of the military regime, that there can be no concealment of the disease. The soldier who conceals venereal disease is guilty of a military offence and is punished accordingly. Once his disease is reported he is promptly admitted to hospital and incarcerated there till he is cured.

This is worthy of your notice, for one cannot but resent certain aspersions upon our soldiers, and of the dangers the country incurs from having its brave defenders returned to civilian life. There is infinitely more danger in the civilian population than in an equal number of soldiers.

In the former the disease is concealed, too often untreated or only partially treated, and the victim of the disease is free to disseminate it without the slightest restraint. For example, the statement has been made by one who investigated the situation which prevailed on the Mexican border, that "during one week-end one woman suffering from active lesions of syphilis, placed 120 soldiers in danger of contracting that disease."

As long as such individuals are free to ply their nefarious trade in our cities, so long will venereal disease be a military problem, in spite of all our efforts to cope with it. It goes far to show that the military problem is only a part of a much larger problem, which requires all the urgent attention that this Association can give to its consideration. The problem is just as important as that of any other epidemic disease, and (first let me emphasize this) more so than that of any other preventable disease: The method of attack should be the same as that against smallpox or tuberculosis, if the best results are to be obtained.

The privilege, to speak openly and freely along these general lines makes it difficult for me to confine myself to the more purely military aspect of the problem, but let us consider briefly what the military authorities have done and are doing. Their primary efforts have been these, viz:—1st, educational; 2nd, prophylactic.* For a time at least our energies were exercised purely in the direction of education, but the results were not encouraging. The attention of the soldier was directed to the question of venereal disease by lectures from medical and company officers and chaplains. The nature of the various diseases was explained, and the perils he ran when he exposed himself to venereal disease; lectures being given to every recruit as soon after joining, as possible. Brief printed instructions were issued, and a copy is in the possession of every recruit.

More effectual is the program of providing wholesome activities of interest for the soldier, in those periods of relaxation from the strenuous discipline of his daily military life. One cannot praise too highly the agency of the Y. M. C. A. in their wholehearted and broadminded endeavors, on behalf of the soldier.

In spite of the best of moral didactic persuasion, the fact remains, the soldier is too prone to yield to the ever-present temptations of women, everyone of whom is the potential agent of one or other of the three diseases, gonorrhoea, syphilis and venereal sore. If our efforts ceased with educational measures, the venereal wards in military hospitals would still be too full.

The greatest measure of success has been met with in the domain of prophylaxis. This in spite of what so-called "moralists" may say, is undeniably a necessity in the army, if any progress is to be made in stamping out venereal disease. Since facilities for early prophylactic treatment have been provided there has been a most gratifying decrease in the number of cases of venereal disease developing, at least in the Military District of which I have knowledge. The comparison of the number of cases developing in a unit, regarded from month to month, with the number of prophylactic treatments is most interesting. With the increase in prophylactic treatments there is a corresponding decrease in the number of cases of venereal disease. And whereas the military wards in Montreal hospitals in the period of 1916-17, were congested, and the available accommodation taxed to the utmost, there is now a comparative ease in this respect. Moreover, the men presenting themselves for treatment have practically without exception all failed to avail themselves of the opportunity provided for prophylactic treatment, or have done so after the period for reporting, (during which any

*Prophylactic, if referred to at all, must be spoken of as a choice between evils. Such a war measure, meant for protection of public interest in the investment of public funds in the fighting man, was made imperative upon civil authority by the supervision of the civil authority. If the latter did their duty military precaution would be practically unnecessary.

prophylactic treatment is efficacious) has elapsed.

Where the disease has occurred, treatment must be given, and in respect to the care of the infected soldier, the cardinal virtue of our treatment lies in the fact that the soldier is prevented from spreading the infection, and is treated to a cure. If this practice could be extended to all classes of the community it would not take long to eradicate venereal disease from this terrestrial globe. And although our prime idea is to make the soldier fit to carry on the duties of war for which he was enlisted, there is no doubt as to the economic value of the procedure. Society is greatly indebted to the military service for every soldier so treated to a conclusion.

It must be admitted that in spite of all endeavors, the disease is still present with us and will continue to be as long as soldiers are congregated in or near centres of population infested with venereal disease. My own city is a striking example of municipal laxity. There is certainly no city on this continent where venereal disease is more rampant and where easier facilities for its propagation exist. Prostitutes walk the street openly and in broad daylight, soliciting their trade. Easy as it might seem, the law makes it difficult to secure convictions, and as they are practically all in an infective condition, the result is obvious, and with the assistance that alcohol gives to the trade in venereal disease, the soldier has great difficulty in escaping.

A greater degree of co-operation is required on the part of our municipal authorities, if our efforts are to be completely successful. As I have pointed out, the problem is not exclusively military, but is also a civil one.

There are evidences of an awakening of the social conscience of the people on this subject, and a better day may not be far distant.

Though the scope of this paper does not necessitate it, perhaps fortunately for me, (for the problem is a difficult and a complicated one) I cannot refrain in conclusion from pointing out two fundamentals, which cannot be too strongly emphasized.

(1) The urgent necessity of controlling the traffic, comprising the prohibition or control of resorts of prostitution, but primarily, the absolute suppression of street walking. The problem of clandestine prostitution still remains, but an undoubted improvement would result if the open traffic were abolished.

(2) Better facilities for the diagnosis and treatment of venereal disease in the large centres are urgently required. The treatment of venereal disease is long and expensive and too often the victim becomes discouraged and desists, and is then even more than formerly a menace to society from the fact that his infectious condition is not apparent. Night dispensaries should be established provided with all facilities for the most up-to-date diagnosis and treatment of the diseases. Consideration should also be devoted to the matter of the supply of the expensive remedies for the treatment of syphilis free or at much reduced rates.

A Plan for Instruction in Hygiene, Preliminary Medical Inspection of Students, and Free Dispensary or Hospital Treatment in Canadian Universities

By J. G. Fitzgerald
Associate Professor of Hygiene, Director Antitoxin Laboratory, University of Toronto

At the present time, a number of the United States universities and colleges give systematic instruction in hygiene and public health to all students, and demand also a preliminary medical examination as a necessary requirement for admission to the university. Free medical attention is also provided during the period when the students are in actual attendance at the university. By means of lectures in hygiene, every student is taught to safeguard his health, and is made at the same time an emissary of the New Hygiene in every community in the country. The fundamental idea underlying these activities is briefly this: The time has come when hygiene, public health and preventive medicine, are matters of vital, general interest and of primary importance. However, it is only by the adoption of a comprehensive scheme of education that this can be brought home to each member of the community. In such an educational campaign the universities must play their part. All students, should therefore be made familiar with the way in which preventable diseases are spread, and the means taken to control them. It is a well-recognized fact that only when the public is fully and accurately informed in regard to communicable diseases and the weapons of defence available, is it possible to combat them successfully. Tuberculosis in particular affords a striking illustration of what can be done to check the spread of infection where a broad and comprehensive educational campaign has aroused public opinion and enlisted public support. The same statement may be made with regard to the campaign against yellow fever in the southern United States, and against bubonic plague in India, and on the Pacific Slope in America. Effective weapons are at the command of the trained hygienist, but financial aid to carry on the campaign and public sympathy and support are forthcoming only when people generally have been thoroughly educated.

This education should find a place in one of the university departments, and obviously the department of hygiene should undertake the task. To provide the necessary instruction, courses should be planned in general hygiene for all students; optional courses offered in first aid, the epidemiology of infectious diseases, with field work, school hygiene, social service in relation to public health, etc. In addition, the usual instruction should be offered in hygiene and preventive medicine to students of medicine and sanitary engineering and to those qualifying for positions in public health service.

Especial emphasis should be laid upon the fact that the greatest good can only come when university students generally have received instruction in hygiene and have had their interest in public health matters thoroughly aroused. In this way there would be formed in each community groups of educated men and women familiar with the facts, who would be available as leaders in the struggle for the suppression of preventable diseases. The support of such leaders and moulders of public opinion is absolutely necessary to combat the general ignorance and superstition with regard to matters of public health and the spread of disease, because professional hygienists and medical men are frequently believed to be influenced by personal motives. Under such circumstances a laudable endeavor may be seriously handicapped at the outset.

With the hearty support of an educated public led by university graduates,

trained in the essentials of personal and public hygiene, any campaign for the improvement of public health service or any measure to suppress any infectious disease should be eminently successful.

In addition to this first essential—education of its students in hygiene and public health, the university department of hygiene has another function to perform. It should endeavor to safeguard the health of those whose further education has been undertaken by the university.

No university should admit any student whose physical condition is such that the strain of university work could only deleteriously affect the health of that student or hasten a breakdown. A clean bill of health for the entering student in the university is as essential as any academic entrance requirement. This can be accomplished only by a preliminary medical examination of all students entering the university. (Such a preliminary examination is at present demanded of students entering the University of California.) Not only should the student receive a thorough physical examination, including tests of vision, etc.; but a history should also be taken to determine whether any incoming student is likely to be a disease carrier: for example, a typhoid or diphtheria carrier. This is most important in those universities where students lead a community life in dormitories, etc.

The university has also very definite duties with reference to the physical welfare of its students. The policy of medical inspection of the pupils in the public schools has been a remarkable advance. Should the health of university students receive less consideration?

Physical exercise is recommended, playing fields and gymnasiums provided, and the health of those in special branches of sport is carefully guarded, but the health of the great mass of the student body usually receives but little attention. Unquestionably, the health of any university student should be of as much concern as that of a university athlete. It is possible to provide for medical care of all students by the adoption of a scheme of sickness insurance, such as is done by the state in England, and also, in the University of California, and in the University of Wisconsin. By the payment of a small annual fee (six dollars), the student is given the necessary preliminary medical examination and free medical service, including hospital care when required. (Only surgical care being paid for as an extra.) Such a plan is in operation at the two state universities mentioned. This idea is actually the application, in the University, of State Medicine, and is one of the first steps in the nationalization of the practice of medicine. The examination of all students is arranged for by the appointment of medical examiners, men and women, and necessary arrangements are also made for dispensary and hospital treatment for those students requiring it. The number of cases of students suffering from pulmonary tuberculosis, and other infectious diseases is undoubtedly much greater than it should be.

One grave question that has not been alluded to, and one which has received inadequate consideration heretofore, is that of venereal diseases amongst men students. Immediate attention should be paid to this subject, both from the educational standpoint and from the viewpoint of hygiene and preventive medicine.

It is not advised where hospital facilities are available, that a special infirmary building be erected. The erection of such buildings at the University of Wisconsin and the University of California was rendered necessary because of the lack of accessible hospital accommodation.

The salaries of the university physician and the other medical examiners as well as the hospital and other expenses in connection with the plan for sickness insurance, would be derived from the student's special infirmary fee.

This in practically all Canadian universities would be sufficient to meet all expenses in connection with this plan.

It is strongly urged that the work of the physical director in universities, be not confused with that of the university physician. Both are necessary, but they serve two entirely separate and distinct purposes. One serves the interest of athletics, the other, that of state and preventive medicine.

Opening of the Connaught Laboratories at the University Farm, University of Toronto

THE Connaught laboratories and the fifty-acre farm which Colonel Albert Gooderham has so generously provided in order that research in preventive medicine and the preparation of serums and vaccines may be carried on, were formally presented to the University of Toronto by Colonel Gooderham, on October 25th, and at the same time officially opened by His Excellency the Governor General.

The occasion was an unusual one and was especially significant in that the establishment of the first research foundation in preventive medicine was announced by Sir William Hearst. On behalf of the Provincial Government, the Premier stated that seventy-five thousand dollars was to be voted at the next session of the legislature to endow research in preventive medicine in the laboratories, the income from which will be devoted entirely to research, since the laboratories themselves are entirely self-supporting. It was also announced that a sum of approximately twenty-five thousand dollars from another source is available and that the income derived from this, too, will be used for the same purpose. Thus the foundation at the outset amounts to about one hundred thousand dollars.

Research work will be undertaken to endeavor to provide means whereby the incidence of and the mortality from communicable diseases, may be lessened. The work at present being done on similar foundations at the Pasteur Institute in Paris, the Lister Institute in London, and the Rockefeller Institute in New York, will serve as a model.

The opening itself was a very simple ceremony. The presentation speech by Colonel Gooderham, acceptance on behalf of the University by Sir Edmund Walker, the speech of His Excellency, declaring the laboratories open, the important announcement of Sir William Hearst and a word from President Falconer, constituted the program of the formal part of the opening. Subsequently a moving-picture film was shown, illustrating phases of the work carried on in the laboratories, this was followed by a tour of inspection of the buildings where the various products of the department were shown, and finally tea was served. Adequate transportation and other facilities were provided. The guests included, in addition to those already mentioned, His Honor the Lieutenant Governor, members of the Provincial Government, the Board of Governors, the Bishop of Toronto, representatives of neighboring universities, representatives also of various interested Government departments, both federal and provincial; members of the medical profession, of the staff of the University, and friends generally of the new laboratories. In the evening, in Convocation Hall, before a very distinguished gathering, Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research, New York, delivered an extremely interesting and able lecture on the war activities of the Rockefeller Institute. Dr. Flexner pointed out some of the important contributions to science which members of the Institute have made and are making, having especially in mind those of very especial value in war-work in the saving of lives and in the minimizing of resultant disabilities. The University was extremely fortunate in having Dr. Flexner on this occasion as a lecturer. A very hearty vote of thanks to the speaker of the evening was moved by Dr. C. K. Clarke, and seconded by Major J. G. Fitzgerald.

The following resolutions were proposed and carried by the Canadian Public Health Association at the Annual Congress, Ottawa, September 25 and 26, 1917:—

1. Resolved, that this Association authorize the creation of a section of Infant and Child Welfare, and that the president appoint a committee of three at once to organize such section in conference with the incoming executive.

2. Resolved, that the Committee on Program be instructed to arrange for the discussion of rural health problems.

3. Resolved, that the Canadian Public Health Association, realizing the need of education with a view to prevention of venereal diseases, request the Censor's Board to remove the ban placed on the play and picture, "Damaged Goods."

4. Resolved, that in order to prevent the spread of diseases through contaminated milk, the members of this society be asked to disseminate literature upon this subject, also that they endeavor to have a by-law in each of the cities and towns of the Dominion, to compel the tuberculin testing of all cows supplying milk, or in the alternative, that the milk should be pasteurized. Said by-law to be in accordance with Government regulations relating to tuberculosis.

5. Resolved, that the Canadian Public Health Association strongly recommends to all the municipalities of the Dominion the employment of visiting nurses and the pasteurization of milk as important measures against infant mortality.

6. Resolved, that the Canadian Public Health Association endorses and strongly urges any measure which in the wisdom of the military authorities of Canada, by means of education and prophylactic treatment or otherwise, may be applied to lessen or reduce the spread of syphilis, gonorrhoea and chancroid, from the civil to the military population.

7. Resolved, that the Canadian Public Health Association, urges upon all Canadian Public Health Authorities having the necessary legal power, that the list of isolatable communicable diseases now established be extended by the addition thereto of syphilis, gonorrhoea and chancroid.

8. Resolved, that the Federal Government be urged to provide for free posting of morbidity returns to district and local medical officers of health.

9. Resolved, that the invitation to hold the next annual congress in Hamilton be accepted subject to the confirmation of the Executive Committee.

10. Resolved, that the reference of the C. M. A. with a view to closer co-operation between the C. P. H. A. and the section of Public Health of the C. M. A., be referred to the executive committee with a view to reporting a feasible basis of co-operation.

11. Resolved, that in view of the necessity of fat in the human diet, and because of the fact that butter is of too high a price to be available to thousands of people in Canada, the Canadian Public Health Association requests that the ban be taken off oleomargarine.

12. Resolved, that the Governments, Federal, Provincial and Municipal, be urged to consider and deal with the necessity of whole-time salaried medical officers of health, physicians and dentists in the rural districts to care for the prevention and treatment of disease.

13. Resolved, that the Federal Government be urged to take immediate steps through any federal department to secure necessary jurisdiction to suppress the advertising and sale in Canada of patent medicines of over 2½ per cent. alcohol.

14. Resolved, that this Association create a section on mental hygiene, and a section on social hygiene, and that the president appoint two committees charged respectively with the organization of the two sections in conference with the incoming executive.

15. Resolved, that the Government of the Dominion of Canada be urged to at once take the steps necessary to establish a federal department of public health.

Editorial

A FEDERAL DEPARTMENT OF PUBLIC HEALTH

A bill to create a Ministry of Health has been introduced in the British House of Commons. Essentially it is an endeavor to finally give to the whole subject of the health of the people the place it should properly occupy in any adequate scheme of government. It has recently been stated that the capital wealth of Britain before the war was only one-fifth of the wealth produced by the nation's toilers. This may be only an estimate; but it is the estimate of a great British economist. If even approximately true it is tremendously significant. No other form of wealth is so worthy of conservation as the wealth resulting from the efforts of all the people enjoying a maximum of good health. No other form of conservation is worth while or even possible without it. To judiciously plan, co-ordinate and execute the biggest possible scheme of promoting public health in Canada, a federal department is absolutely necessary. Ask your parliamentary candidate in the approaching federal election what stand he proposes taking in the matter of dealing vigorously with the proposal to establish this department. Vote for the man who is pledged to aid in making the world safe for democracy and the establishment of a federal department of public health.

HEALTH INSURANCE

There are many reasons why health insurance is likely to come into the realm of practical politics in Canada, in the near future. There are also many reasons why careful study of the subject will repay students of social welfare.

So far as public health interests are concerned the value of health insurance lies in the fact that it lends an opportunity for the organization of preventive and curative agencies and their widespread application. The fact that in many sections of the community there are families who do not call in a physician because of the cost, is serious, both for the families concerned and for the state. That a large part of every physician's practice is for the patients who never pay and perhaps never can pay, makes neither for the efficiency of the physician nor the happiness of his patients. That the state extends quasi-charity to thousands of public ward and dispensary patients is certainly not conducive to the self-respect and citizenship of such patients. That the physicians who attend them are paid a pittance for their services means that such physicians' incomes must be made up by heavy charges against persons of means. All of which means bad organization.

Health insurance properly applied may easily mean the extension of hospital services to persons of very moderate means as a right, not as a charity. It may bring payment for physicians who now attend public ward cases for nothing, as well as charity patients. It will probably do much in the way of eliminating the competitive elements from medical practice and make the physician's income much more stable. Then, too, by showing the number of persons requiring medical aid and the serious drain upon the resources of the state which widespread illness entails it will doubtless prove a stimulus to public health activities.

The great difficulty in developing legislation on the subject in other countries has been opposition from factions who believed their own particular interest to be endangered. This was particularly the case in Great Britain where opposition on the part of physicians was so active as to emperil the putting into force of Lloyd George's Act.

It is to be hoped that in Canada, however, the experience of other countries will bear fruit. After all, the great consideration is the welfare of the average member of the community, and this should be quite consistent with the in-

terest of the physician who must be most active in making health insurance an instrument to this end. The underlying principles are sound. His duty should be largely in the direction of seeing that their method of application is carefully worked out. Since this type of legislation seems to be near at hand, the subject will be worthy of much study during the coming winter.

Correspondence

To the Editor, Public Health Journal:

I am glad to note in your October issue that it is the intention of the "Public Health Journal" to prosecute a vigorous campaign in favor of the institution of a federal department of public health. This is one of the most urgent needs of the day, a necessity emphasized by conditions created by the war. Many public health questions are of the utmost importance to our national life. The appalling loss of human life has made the conservation of health and the saving of life one of the great problems which will confront all nations in the near future.

When one thinks of what might be accomplished in the control of the infectious diseases, tuberculosis, venereal diseases, alcoholism and other drug addictions, by sanitation, etc., surely it is time the public demanded such action upon the part of our Government as will place these important matters under the control of one department with a responsible head. The head of this department should be a qualified medical man, with breadth of view and practical training that would enable him to grasp the great national problems confronting him. The medical profession has suffered and medical progress has been retarded by having the initiative, direction and control of medical affairs in the hands of laymen, who at best are incapable of understanding the technical aspect of the questions involved. A great advance will be made when, in the interests of the public, we assert our rights in the administration of affairs which doctors only are capable of directing.

H. B. ANDERSON.

To the Editor, Public Health Journal:

I read with a great deal of interest your October editorial advocating the establishment of a federal board of health. In that article you were voicing, I am sure, the opinion of the medical profession and the social workers of the entire Dominion. It is self-evident that certain aspects of public health cannot be adequately dealt with except by such a federal board. Take, for instance, the medical aspects of immigration. Up to the present our inefficient methods have made it possible for cases of mental abnormality to enter our land undiagnosed, and thus free to settle in the Dominion. And now, as a result, we find that we are faced with the tremendous problem of finding institutions for untold thousands of mental defectives and insane. Probably 1½ per cent. of our population belong to the ranks of the mentally abnormal, and half our cases came from lands outside of Canada. This is no exaggerated statement, but is based upon the careful investigation of nearly 3,000 cases at the Toronto General Hospital. Yes, we have allowed feeble minded and insane immigrants to enter our land at will, and thus Canada enjoys the unenviable reputation of being the dumping ground of the defectives of Europe. This means nothing else than national suicide.

After the war, all authorities agree, immigration to Canada will be greater than ever, and the quality worse than heretofore. Are we going to stand idly by and see our country swamped with more degenerates? Surely not! The time has come for the establishment of a federal department of health, freed from

political influences, to deal with this and other important matters. All success to your Public Health Journal in its noble fight!

CLARENCE M. HINCKS.

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10 Homewood Place, Toronto.
November 5, 1917.

To the Editor, Public Health Journal:

Dear Sir,—Hoping that The Public Health Journal is interested in the necessity of creating a federal department of health, and being personally aware of the need of such a department, I beg to enclose a copy of a resolution recently passed by the National Council of Women of Canada.

"That The National Council of Women urge the Dominion Government to establish a Federal Department of Health, whose duties would embrace the following: compilation of statistics; co-ordination of the existing Provincial and Municipal Boards of Health; issue of a weekly bulletin similar to the Washington bulletin; preparation of plans of waterworks, sewerage systems, abattoirs, incinerators and other public works necessary to the health of all municipalities; direction of a Dominion-wide plan, with financial assistance to the provinces to deal with the tubercular and feeble-minded so that the necessary institutions may soon be provided for all cases requiring permanent segregation; further, to organize a Dominion Infant and Child Welfare Bureau directed by competent women; and finally, to institute immediately a Dominion campaign for control of venereal diseases, which would embrace the best features of the British and Australian methods."

A feature of the Child Welfare division might well be the methods and plans of granting pensions to mothers, who of necessity, must become the wage-earners of their families; and the jurisdiction of this work, (including the adequate and helpful, also co-operative, supervision of the home so benefited) should be its charge, rather than that this subject should be placed under the Department, of Labor. Thanking you for your interest in this matter. Believe me, sincerely,

FLORENCE G. HUESTIS.

Book Reviews

"Preventive Medicine and Hygiene," by Milton J. Rosenau. Third edition. Containing a special section on military hygiene. New York: D. Appleton & Co. 1917.

Rosenau's work is still in a class by itself. In four years three editions have appeared, and when it is recalled that this is a book of over twelve hundred pages, it will be realized that there was and is a great demand for such a book and that it is most successfully supplying the need. As before, this volume is divided into sections, in this edition, thirteen in number. The prevention of communicable diseases; immunity, heredity, and eugenics; foods, air, soil, water, sewage disposal, refuse disposal, vital statistics, industrial hygiene, and diseases of occupation; schools, disinfection, and military hygiene. Of these, G. C. Whipple has contributed the sections dealing with sewage disposal; John W. Trask, the section on vital statistics. Chapter six in section one, mental hygiene, is by Thomas W. Salmon. Section thirteen, military hygiene, appears for the first time in this edition, which indeed, the author especially stresses in his preface when he states, "This third edition might well be called a special or military edition."

This work is so satisfactory in many ways that criticism is rendered somewhat difficult. However, it has been not an uncommon observation that the arrangement of this work is not entirely satisfactory. To many, the introduction seems unfortunate. A preliminary section briefly outlining the problems and scope of the subject, would seem to be more logical than an immediate plunge into the subject of the prevention of communicable diseases. Again, the student who puts the question to himself, "What are the chief causes of death which hygienic measures may be expected to influence?" is confronted with the fact that in no section in this book is this information given, at least not in a complete and convenient form.

The book, however, is, generally speaking, so admirable, that what would be readily passed over in a book of mediocre character, can hardly pass unnoticed in one showing the general excellence of this work. No one, physician, student or social worker, or indeed anyone interested in the problems of preventive medicine, can afford to be without this volume as a book of reference.

"The Modern Milk Problem," by J. Scott McNutt. McMillan Company, New York.

In this very complete handbook the author deals radically with the milk question in all its phases. The milk problem exists because milk is one of the most valuable and most largely used human food, and at the same time a food which most readily lends itself to contamination. With scientific development and the education of the public to knowledge of the danger of impure milk has come the demand for better facilities of handling the product. At the same time rapidly increasing city population has created a transportation problem. The cases of the farmer, the middleman, the railroad and the consumer are fairly and fully dealt with. The book is replete with tables, statistics and reports of various committees on the milk problem. It is profusely illustrated and should prove a valuable reference to all interested in this vital and ever-increasing problem.

"Food Poisoning," by Edwin Oakes Jordan, chairman of the department of Hygiene and Bacteriology, the University

of Chicago. Cloth; 115 pages with illustrations. Chicago: The University of Chicago Press.

At first thought one is inclined to place most cases of food poisoning under the mysterious and all inclusive heading—ptomaine poisoning. Upon reading Jordan's monograph, one becomes impressed by the diversity of causes which may give rise to this type of disturbance. The author has brought together in a very readable, non-technical form, the various kinds of food poisoning. He discusses poisoning due to the ingestion of plants, animals which contain inherent toxins, the anaphalactic intoxications, mineral or organic poisons which may adventitiously contaminate food, poisoning due to pathogenic bacteria and animal parisites, and finally intoxication by products formed in food by microorganisms.

Three diverse types of food poisoning are presented in a rational well-balanced way. The treatment of the much discussed question of food adulterants and preservatives is eminently sound. The legitimate use of preservatives is especially important now that the world's food supply is so scanty; the popular prejudice against the use of substances such as glucose or sodium benzoate (in limited quantities) which will conserve food products, should be corrected.

The reviewer cannot agree with the basis the author would use for determining whether preservatives are harmful or not. It is not fair to assume, as Jordan does, that bacterial protoplasm is no more easily injured than human protoplasm is. Some substances are much more toxic to some organisms than to others, for example copper sulphate is decidedly more toxic to algae, bacteria and marine forms in general than to mammals. Quinine is more deadly to the malarial parasite than it is to man. Still, it is better to err on the side of caution in these matters.

The danger of the typhoid carrier is particularly emphasized, and the question of the advisability of the state performing Widal tests at intervals on all who have recovered from typhoid, is raised, so that precautionary measures could be taken with carriers.

The need for more accurate information on practically all of the phases of food poisoning becomes patent on reading this short volume. The busy practitioner as well as the lay person will find this book well worth reading. For those who wish more detailed information a few well-chosen references are given.